

(57) Abstract: The invention is to incorporate the satellite radio in television and the facility of switching (ON/OFF) the power supply which is passed to the video section , CRT filament section and the satellite radio section. The features of the satellite radio including the frequency tuning, volume control etc., can be seen on the a) Television screen also b) Liquid Crystal Display (LCD) screen. A provision for a digital data port need to be fixed in the television set for the multimedia service viz. slow motion image, mailing etc., and also for connecting computers, laptop etc.,. The facility for switching (ON/OFF) of the video section in order to listen to the television audio only. The sound amplifier section and speaker of television set can be used for both satellite radio and television audio.

TITLE :

Television arrangements with satellite radio.

DESCRIPTION :

The invention relates to Television in particular . The invention relates to incorporation of Satellite Radio . The object of the invention is to incorporate the satellite radio and the facility of switching (switch ON/OFF) the power supply which is given to the video section , CRT filament section and the satellite radio section. The features of the satellite radio including the frequency tuning, volume control etc., can be seen on the a) Television screen also b) Liquid Crystal Display (LCD) screen. A provision for a digital data port need to be fixed in the television set for the multimedia service viz. slow motion image, mailing etc., and also for connecting computers, laptop etc.,. The facility for switching (ON/OFF) of the video section in order to listen to the television audio only. The sound amplifier section and speaker of television set can be used for both satellite radio and television audio. In order to incorporate this principle there is a need for technological changes in the existing television . Therefore the circuitry of the known television is changed .

It is the primary object of invention to invent a television which incorporates satellite radio.

It is another object of invention to invent a television which incorporates satellite radio which results in saving lots of money.

It is another object of invention to invent a television which incorporates satellite radio which incorporate novel technology.

The specialty of the invention is the incorporation of satellite radio and the facility to switch ON/OFF the power supply which is given to the satellite radio section , video section and CRT filament section in a television .

The satellite radio is used to hear the different channels provided by the satellite radio stations . It is incorporate in a television to hear the excellent audio quality .

The sound signals in a television are FM (Frequency Modulated) . The quality of the television sound is normally good when compared to radio and monotape recorders . But today the television has an

excellent sound effect (i.e.) preference (or) adjustments of Bass , Treble , AVL (Auto Volume Leveler) and equalizer effects . The televisions are having more than one speaker . In addition , for excellent bass results , subwoofer for rich bass is also attached . The power of the audio output is about 40watts, 60 watts ,100 watts ,200 watts ,350 watts etc., . The television is having a stereo sound effect . Therefore the sound effect in a television is nearly equal to Hi-Fi (High Fidelity) music system . The above mentioned sound effects in a television are of excellent quality .

If the television is switched ON, the user can select either television (or) satellite radio (i.e.) depending on the preference of the user.

But the power supply which is given to the remote section and the sound section is always ON, when the television is switched ON and the user cannot switch OFF those sections .

Therefore the user switch ON (or) switch OFF the video section, the CRT filament section and the satellite radio section in a television

The user can opt for

1) Operation of Television set or

2) Operation of Satellite radio, when the television set is switched ON.

1) If the user opts for the operation of television, the satellite radio does not function automatically (the power supply of satellite radio is automatically switched OFF).

When the user watching the video and hearing to audio of television, he can switch OFF the power supply given to the video section and the CRT filament section by pressing a key , named eg: 'video' and can listen to audio only. The power consumption upto 60% can be saved from the total consumption of power of the television set when the user presses the 'video' key which is used to switch OFF the video section. Also when the user can make use of the 'video' key and switch ON the video section to watch the video on the television screen.

2) If the user opts for the operation of satellite radio, the television does not function automatically (the tuning voltage of the tuner is switched OFF by a switching and the I.F signal of the television tuner is cut off).

The display of features of the satellite radio is achieved in a television set by adopting two possibilities either

a.) By displaying the features on the television screen or

b) By displaying the features on the LCD screen.

a) The features of the satellite radio can be displayed on the television screen. The power supply which is given to the video section and the CRT filament section is switched ON automatically at a time. When the features of the satellite radio are arranged to be displayed on the television screen, the switching circuit (CTL 2) is not needed. The user can select the features of the satellite radio viz. frequency tuning, volume control etc., which are displayed on the television screen. After selecting the features of the satellite radio, the user can switch OFF by pressing the key 'video' [i.e. switching OFF the power supply which is given to the video section (CTL 3) and the CRT filament section (CTL 4)]. Now the user can listen to the satellite radio. If necessary, the user can again switch on the key 'video' and select the features of the satellite radio and then switch OFF. Therefore the user can save the power supply nearly 60%. And the life of the components of the video section of the television set viz. LOT , IC's, Transistors, CRT etc., is maintained.

b) The LCD can be fixed with the television set on top or bottom of the television screen. The power supply which is given to the video section and the CRT filament section is automatically switched OFF by a switching circuit (CTL 2). As the LCD is fixed to the television set, a switching circuit (CTL 2) is needed separately to switch ON/OFF the operations of the video section and the CRT filament section at a time. Also the user cannot operate the ' video ' key. The remote section in the television set sends the signals to the LCD section for displaying the features of the satellite radio which is operated by using the key , named eg: Features. The power supply which is required for the operation of LCD section is obtained from the provisions given to the satellite radio. The power supply of the satellite radio can be arranged separately as shown in fig.(1) or can be obtained from the power supply of the sound section of the television set, when a transformer is properly designed with required Amperes for operating both the satellite radio sections and sound section in the television set.

The CRT and the video section is switched ON/OFF simultaneously at a time by the switching circuit (CTL 2, CTL 3, CTL 4).

If the television is without a remote control facility , the user can select television (or) satellite radio using switches manually in the front side (or) any side of the television .

If the television has a remote control facility, the selection of television (or) satellite radio is operated by using the remote control and the facility to switch ON/OFF the power supply which is given to the video section and the CRT filament section by using the remote control .

Further objects of the invention are explained from the following description .

FIG. 1 shows the circuit diagram of the power supply of the television with remote control.

FIG. 2 shows the circuit diagram of the remote section in a television .

FIG. 3 shows the circuit diagram of the power supply of the television without remote control .

FIG. 4 shows the diagram of the switching circuit for satellite radio, television and external audio & video.

The power supply of the television with remote control is shown in FIG.1 . From the figure 1 , the input voltage of the transformer is about 220-220 V A/C. The voltage is fed to the manually control switch (power) and from it is fed to the CTL1, which may be a Relay (or) Transistor (or) IC type switching through a fuse (F) . The CTL1 is activated by the remote section wherein signal from the remote IC is given to the CTL1 to switch ON/OFF the voltage which is given to the input of the transformer . The output of the transformer is nearly about (a) 150 V AC , (b) 12V or 20V AC , (c) 6.3 V AC and (d) 12 V or 18 V AC respectively . Using CTL2 , CTL3 , CTL4 and CTL5 can switch ON/OFF of the voltage 150 V AC , 6.3 V AC and 12V or 18 V AC respectively. The CTL2 ,CTL3 and CTL4 are activated by the remote section .Using the Bridge Rectifier (BR) , 150 V AC is converted to 150 V DC and it is filtered by the capacitor (C) and reduced by a resistor (R) and finally it is given as nearly 110 V to 120 V DC and this voltage is fed to (i) [video section] . Similarly 12 V or 20 V DC is fed to (ii) [sound section] and about 12 V or 18 V DC is given to (iv) [satellite radio section] . The voltage 6.3 V AC is fed to (iii) [CRT filament section] . The above mentioned output voltage of the transformer is an approximate one and it varies from one television to another television (i.e.) Black and White

television , Colour television , 14" television , 20" television , 21" television , 25" television etc.,.

The diagram of the remote section in a television is shown in FIG. 2. From the figure 2, the remote section contains Infrared detector, Remote microprocessor (CPU) , Customer panel and Remote power supply. The television SMPS (Switch Mode Power supply) is activated by the remote section using CTL1, CTL2, CTL3, CTL4 and CTL5 respectively . The Infrared detector detects the signals received from the handset of remote control and it is fed to the remote microprocessor (CPU) . The Customer panel includes Brightness , Contrast , Volume control and Sharpness and these are control by the remote microprocessor . The Remote power supply supplies the required voltage to operate the remote section . The Remote microprocessor (CPU) sends the ,

- (i) Signal to the programme selection to select the particular channel .
- (ii) Signal to CTL1 , CTL2 , CTL3 , CTL4 and CTL5 to switch ON/OFF the input voltage of the transformer, voltage to the video section , CRT filament section and satellite radio section .
- (iii) Signal to control the various circuits of the television .

- (iv) Signal to switch ON/OFF the television power supply (stand-by light indicator).
- (v) Signal to function the features of the sound section .
- (vi) Signal to function the features of the satellite radio section .

The output of the television SMPS (Switch Mode Power Supply) is given as (a) Video section [110 V to 120 V DC] , (b) Sound section [12 V or 20 V DC] , (c) CRT filament section [6.3 V AC] and (d) Satellite radio section [12 V or 18 V DC] .

The power supply of the television without remote control is shown in FIG. 3. From the figure 3, the function of power supply is the same as the function of power supply as described early in FIG. 1(a) . In fig. 1, the CTL1, CTL2, CTL3, CTL4 and CTL5 are activated by the remote section to switch ON/OFF the different sections. But in FIG. 2 , the switches (SW1, SW2, SW3, SW4 and SW5) are used to switch ON/OFF the input voltage of transformer , voltage to (i) Video section , (iii) CRT filament section and (iv) Satellite radio section .The switches are manually activated by the user . Therefore the switches are placed as shown in the FIG. 2 wherein CTL'S are placed as shown in FIG. 1(a) . The switching circuit (CTL2, CTL3 etc.,) is to be fixed at the place

where the required power supply for different sections viz. satellite radio, video section etc., is obtained.

From figure. 4, the switching circuit of the television, satellite radio and external video and audio have inputs of internal television (a) video and (b) Audio; the external (g) video and (h) video and the satellite radio (e) Audio and (i) command from remote section. The output of switching circuit has (c) video and (d) audio. The output of video signal (c) to video amplifier, chroma section and audio signal (d) to sound amplifier. The external video and audio is connected with the VCD, VCP etc.,. The internal television composite video signal (a) is the output of video detector and the audio signal (b) is the output of sound detector section. The selection of video and audio of television, audio of satellite radio, external video and audio, commands signal from remote section is given as the input of the switching circuit. If the user selects the television, the internal video and audio of television is connected to the video section (c) and sound amplifier (d) by the switching circuit. And if the user selects the satellite radio, the audio signal of the satellite radio section is connected to the sound amplifier (d) by the switching Circuit. If the AV is selected by the user, the external video and audio is connected to the video section

(c) and sound amplifier (d) by the switching circuit as shown in the figure. 4.

The satellite radio section (f) contains Antenna, LNA (Low Noise Amplifier), Chipset, D/A (Digital to Analog) converter. The Antenna receives the down link frequency from the satellite. The down link frequency is received by the LNA. And the LNA is used to boost the satellite signal. The signal from the LNA is received in a chipset. The chipset contains Decoder, Receiver, Time division demultiplexer, Demodulator. The signal from the chipset is the base band digital signal. The digital audio signal is converted to the analog audio signal of satellite radio. Then the audio signal is given to the sound amplifier for further amplification.

If the television has the remote control section, the selection of the television, satellite radio, external video and audio can be operated by the remote control. The selection of the television, satellite radio, external video and audio is operated by the switching circuits is explained above.

If the television has no facility of remote control section, the television audio and satellite radio audio signal is connected to the sound amplifier section for further amplification of audio signal. If the television is switched 'ON', the satellite radio is switched 'OFF', the

television audio is amplified by sound amplifier section. If the satellite radio is switched 'ON', the television is switched 'OFF' (Video section and CRT is cut off), the satellite radio audio is amplified by sound amplifier section.

The audio of satellite radio and television is properly matched with the sound amplifier section to have the clear quality of audio output.

The sound amplifier and speaker in a television set are used for both audio of satellite radio and audio of television.

In future, if the Satellite TV programmes viz., the B.B.C, Star TV, Discovery channel, CNBC etc., are provided by the world space or the world space authorised service providers through satellite radio can be watched on the television screen.

The incorporation of the satellite radio in television, according to my invention, Television arrangements with satellite radio and the video signal from the satellite radio section which are given to the video section of the television. Therefore the programmes of the satellite television through world space can be watched by the user on the television screen.

The user can utilise the entire features of the satellite radio in a television.

CLAIMS :

1) The television is modified for incorporation of satellite radio.

2) A television as claimed in claim (1), the facility of switching (switch ON/OFF) the power supply which is given to the video section and the CRT (Cathode Ray Tube) filament section in a television (the switching circuit which is used to switch ON/OFF both the video and CRT at a time using a single key).

3) A television as claimed in claim (1), The facility of switching (switch ON/OFF) the power supply which is given to the satellite radio section .

4) A television as claimed in claim (1), The same sound amplifier and speaker in a television set are used for both audio of satellite radio and audio of television.

(5) A television as claimed in claim (1), The television which has remote control facility (the user activates the use of a remote control) and the television which has not remote control facility (manually activated by the user). This is clearly explained in figure.1, 2, 3 of the invention.

(6) A television as claimed in claim (1), If the television set is switched ON, the power supply which is given to the remote section and the sound section is always 'ON', the user cannot switch OFF those sections as there is no provision for a switching control.

(7) A television as claimed in claim (6), If the television set is switched ON, the user can select either television or satellite radio.

(8) A television as claimed in claim (7), At the time of functioning of the television, the power supply which is given to the satellite radio section is switched OFF.

(9) A television as claimed in claim (8), At the time of functioning of the television, the user can switch ON/OFF both the video section and the CRT filament section at a time using a single key in order to listen to the audio of television only.

(10) A television as claimed in claim (7), At the time of functioning of the satellite radio, the tuning voltage of television tuner is off. Therefore the IF signal is cut. But the sound section is ON.

(11) A television as claimed in claim (10), The features of the satellite radio viz. tuning, volume control etc., can be seen on a) Television screen, b) LCD screen.

(12) A television as claimed in claim (11), When using a) the television screen for seeing the features of satellite radio, the user completes the selection of channels (or) features of satellite radio, he can switch OFF the video section using a key which is used to switch OFF both the video section and CRT filament section at a time in a television and therefore the user can save the power

consumption upto 60% from the total consumption of the power of the television set. And the life of the components of the video section is also maintained.

(13) A television as claimed in claim (11), when using the LCD screen, the user can see the features of the satellite radio in liquid crystal display screen. At the time of the functioning of the LCD of the satellite radio, the video and the CRT section is switched OFF.

(14) A television as claimed in claim (10), The satellite radio can be used by the user to listen to the different channels provided by the satellite radio stations (satellite radio service providers).

(15) A television as claimed in claim (7), A switching circuit is used for switching of the satellite radio, external video and audio, internal television video and audio to chroma section, video amplifier section and sound amplifier section (figure. 4). The same switching circuit is used for selecting any of the inputs (viz. SR, AV, TV) by the command of remote section. The selected input is connected to the out put of the switching circuit.

(16) A television as claimed in claim (1), A provision for a digital data port need to be fixed in the television set for the multimedia service viz. slow motion image, mailing etc.,. and also for connecting computers, laptop etc.,.

(17) A television as claimed in claim (1), In future, if the Satellite television programmes viz., the B.B.C, Star TV, Discovery channel, CNBC etc., are provided by the world space or the world space authorised service providers through satellite radio can be watched on the television screen.

(18) A television as claimed in claim (17), The incorporation of the satellite radio in television, according to my invention, Television arrangements with satellite radio and the video signal from the satellite radio section which are given to the video section of the television. Therefore the programmes of the satellite television through world space can be watched by the user on the television screen.

(19) A television as claimed in claim (1), The user can utilise the entire features of the satellite radio in a television.

S. RAMKUMAR

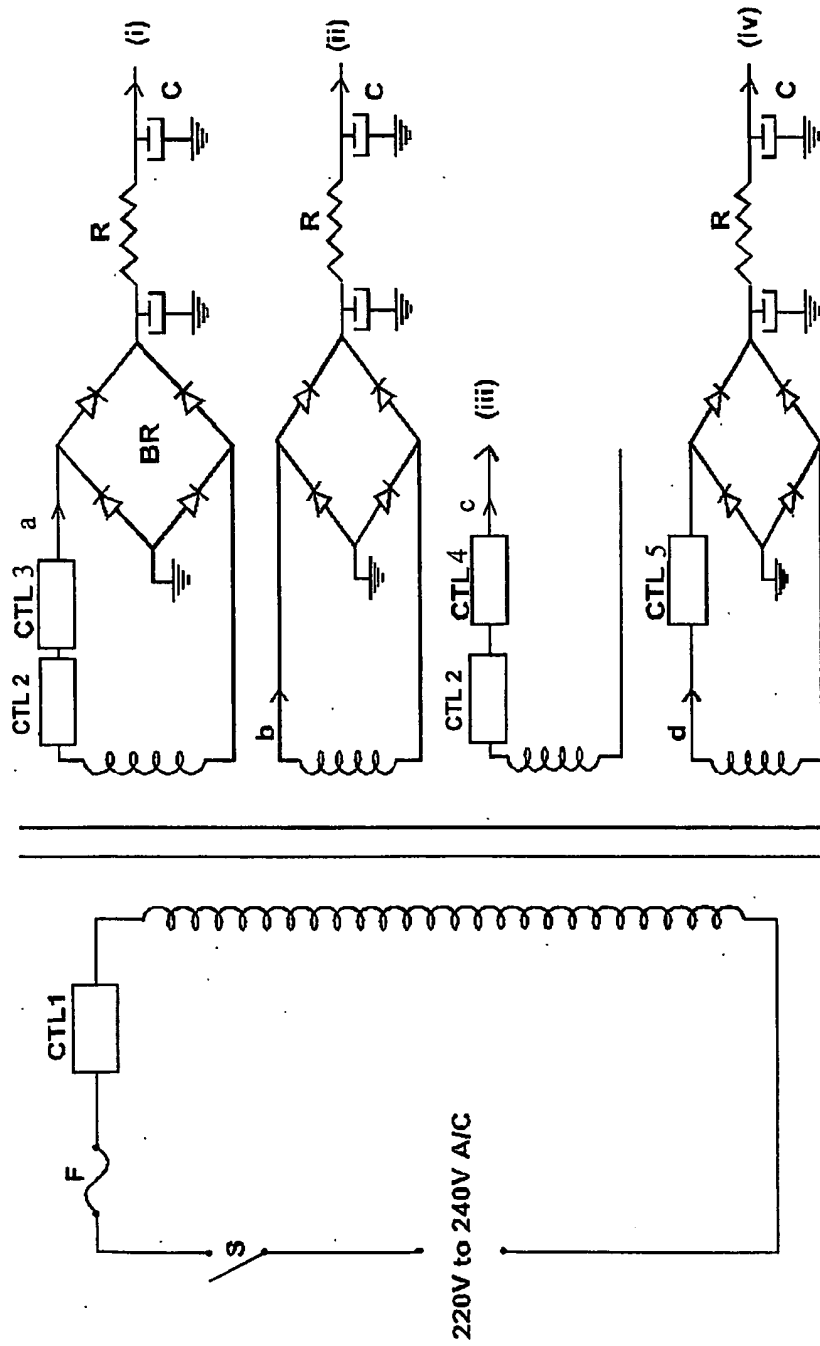


Fig : 1

S. RAMKUMAR

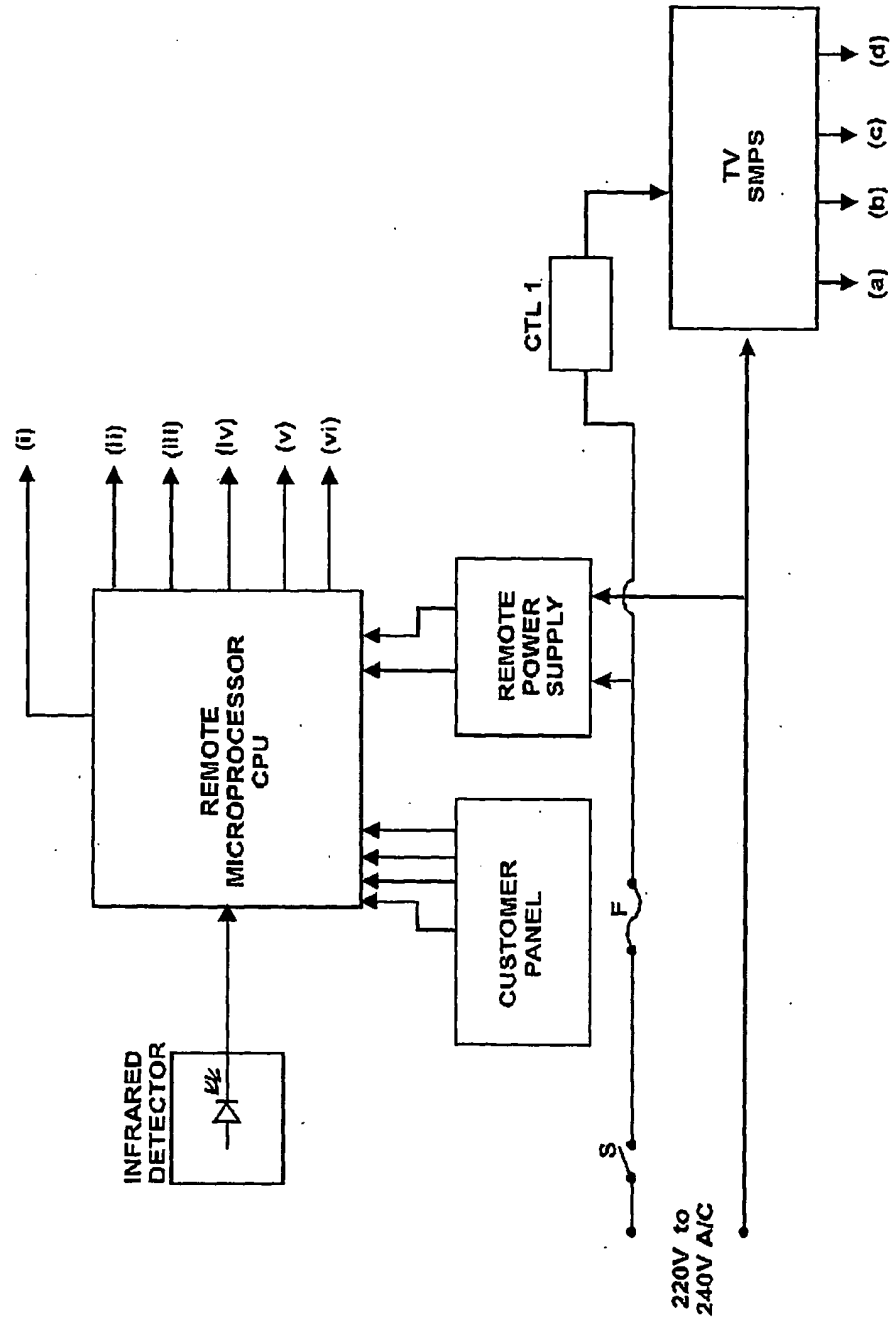


Fig: 2

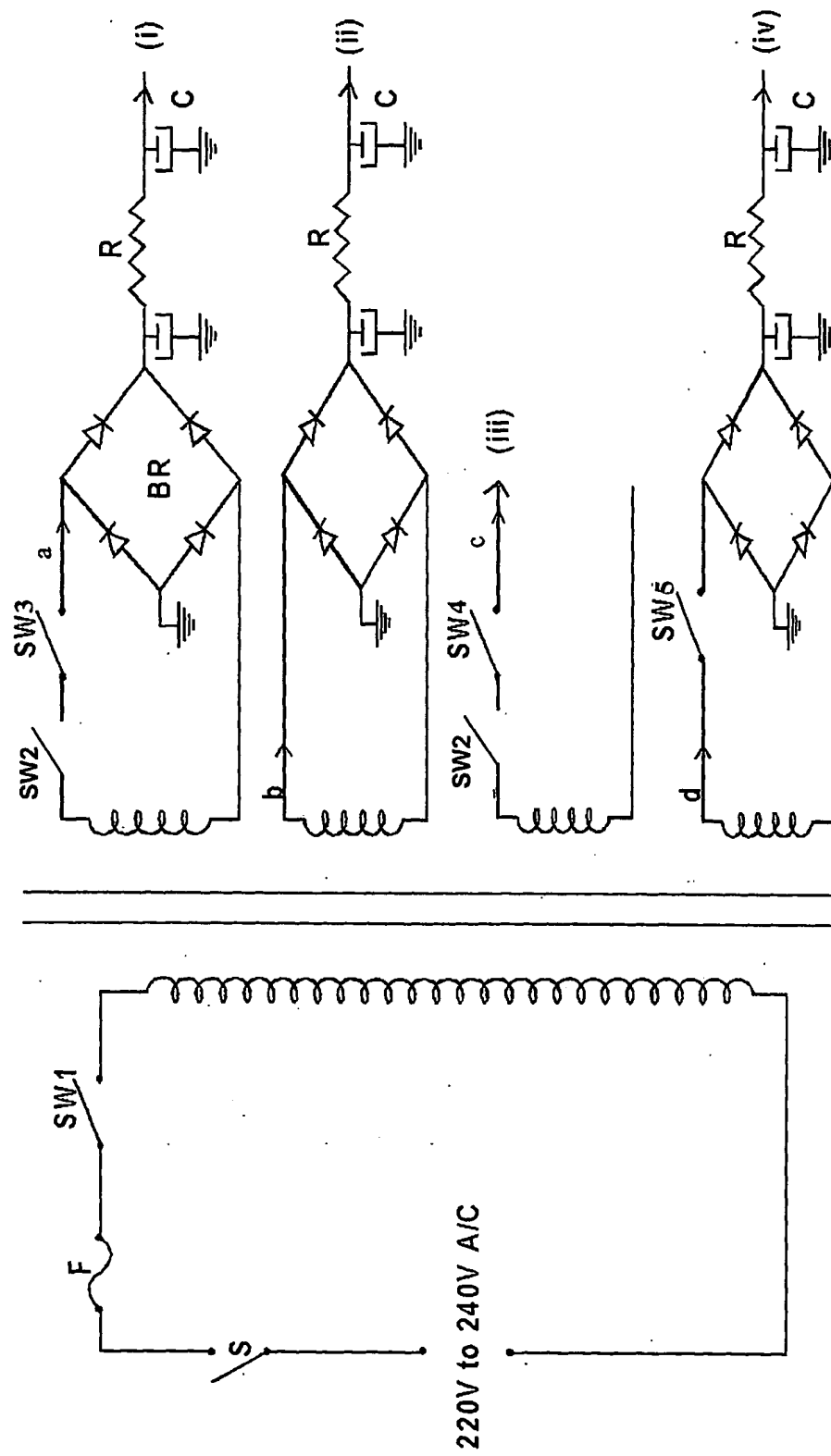


Fig: 3

S. RAMKUMAR

S. RAMKUMAR

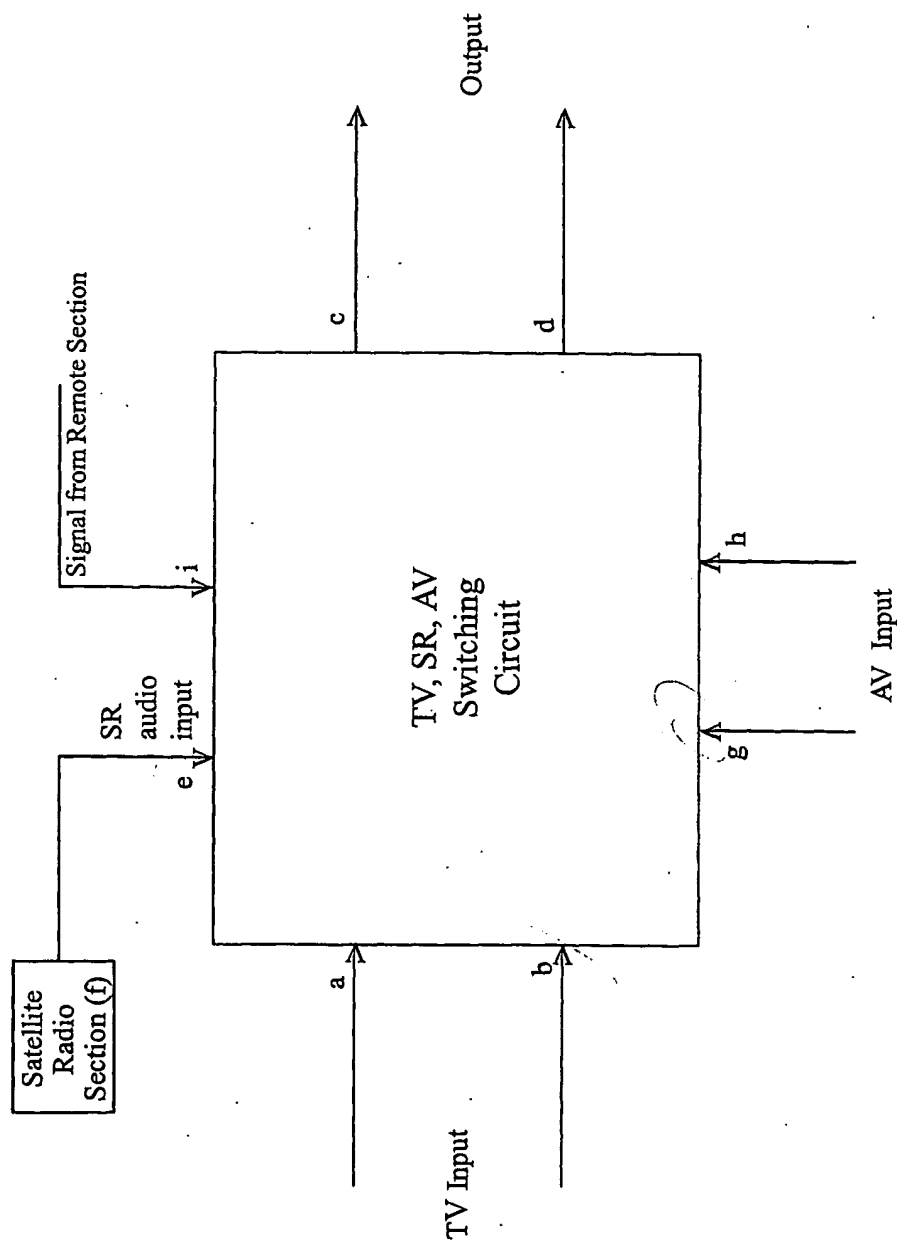


Fig : 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IN 03/00240-0

CLASSIFICATION OF SUBJECT MATTER

IPC⁷: H04N 5/44, 5/63

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC⁷: H04N 5/44, 5/60, 5/63

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EPODOC, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2337 679 A (SANYO Electric Co.) 24 November 1999 (24.11.99) <i>abstract, fig. 1,4,9 and description of figures and page 13, lines 2-13.</i>	1-19
X	JP 06 6729A (SONY CORP.) 12 April 1994 (12.04.94) (abstract). [online] [retrieved on 2003-11-06]. Retrieved from: EPOQUE PAJ Database <i>abstract and figures.</i>	1,2,17,18,19
A	----	3-16

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:

„A“ document defining the general state of the art which is not considered to be of particular relevance

„E“ earlier application or patent but published on or after the international filing date

„L“ document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

„O“ document referring to an oral disclosure, use, exhibition or other means

„P“ document published prior to the international filing date but later than the priority date claimed

„T“ later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

„X“ document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

„Y“ document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

„&“ document member of the same patent family

Date of the actual completion of the international search

6 November 2003 (06.11.2003)

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Name and mailing address of the ISA/AT

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/IN 03/00240-0

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
GB	A	2337679		none	
JP	A	66729A2		none	

AMENDED CLAIMS

[received by the International Bureau on 23 Janvier 2004 (23.01.04);
original claims 1-19 replaced by new claims 1-23]

Claims :

1) The television is modified for incorporation of satellite radio.

2) A television as claimed in claim (1), the facility of switching (switch ON/OFF) the power supply which is given to the video section and the CRT (Cathode Ray Tube) filament section in a television (the switching circuit which is used to switch ON/OFF both the video and CRT at a time using a single key).

3) A television as claimed in claim (1), The facility of switching (switch ON/OFF) the power supply which is given to the satellite radio section .

4) A television as claimed in claim (1), The same sound amplifier and speaker in a television set are used for both audio of satellite radio and audio of television.

(5) A television as claimed in claim (1). The television which has remote control facility (the user activates the use of a remote control) and the television which has not remote control facility (manually activated by the user). This is clearly explained in figure.1, 2, 3 of the invention.

(6) A television as claimed in claim (1). If the television set is switched ON, the power supply which is given to the remote section and the sound section is always

ON, the user cannot switch OFF those sections as there is no provision for a switching control.

(7) A television as claimed in claim (6). If the television set is switched ON, the user can select either television or satellite radio.

(8) A television as claimed in claim (7). At the time of functioning of the television, the power supply which is given to the satellite radio section is switched OFF.

(9) A television as claimed in claim (8). At the time of functioning of the television, the user can switch ON/OFF both the video section and the CRT filament section at a time using a single key in order to listen to the audio of television only.

(10) A television as claimed in claim (7). At the time of functioning of the satellite radio, the tuning voltage of television tuner is off. Therefore the IF signal is cut. But the sound section is ON.

(11) A television as claimed in claim (10). The features of the satellite radio viz. tuning, volume control etc., can be seen on a) Television screen, b) LCD screen.

(12) A television as claimed in claim (11). When using a) the television screen for seeing the features of satellite radio, the user completes the selection of channels (or) features of satellite radio, he can switch OFF the video section using a key which is used to switch OFF both the video section and CRT filament section at a time in a

television and therefore the user can save the power consumption upto 60% from the total consumption of the power of the television set. And the life of the components of the video section is also maintained.

(13) A television as claimed in claim (11), when using the LCD screen, the user can see the features of the satellite radio in liquid crystal display screen. At the time of the functioning of the LCD of the satellite radio, the video and the CRT section is switched OFF.

(14) A television as claimed in claim (10). The satellite radio can be used by the user to listen to the different channels provided by the satellite radio stations (satellite radio service providers).

(15) A television as claimed in claim (7). A switching circuit is used for switching of the satellite radio external video and audio, internal television video and audio to chroma section, video amplifier section and sound amplifier section (figure. 4). The same switching circuit is used for selecting any of the inputs (viz. SR, AV, TV) by the command of remote section. The selected input is connected to the out put of the switching circuit.

(16) A television as claimed in claim (1), the incorporation of radio in a television can be of satellite radio broadcasting and also of terrestrial radio broadcasting.

(17) A television as claimed in claim (16). At the time of functioning of radio in a television, either it can be terrestrial radio broadcasting, while operating the terrestrial radio broadcasting the tuning voltage of the television tuner automatically 'OFF'. Therefore the I.F signal is cut. The sound section in a television is 'ON'. But the features of the terrestrial radio broadcasting viz. tuning, volume control etc. can be seen on a) Television screen, b) LCD screen as explained in claims (12,13).

(18) A television as claimed in claim (17), when using a) Television screen, b) LCD screen, the tuning voltage of the television tuner is 'OFF'.

(19) A television as claimed in claim (1). A provision for a digital data port need to be fixed in the television set for the multimedia service viz. slow motion image, mailing etc., and also for connecting computers, laptop etc...

(20) A television as claimed in claim (19). At the time of functioning of multimedia service viz. slow motion image, mailing, fax etc., or data in a television can be accessed through satellite radio broadcasting or data broadcasting. The accessible features of multimedia service or Data in a television can be watched on a) Television screen b) LCD screen as explained in claims (12,13). But the tuning voltage of the television tuner and the sound section in the television are switched 'OFF' automatically

(21) A television as claimed in claim (1). In future, if the Satellite television programmes viz., the B.B.C, Star TV, Discovery channel, CNBC etc., are broadcast or provided by the world space or the world space authorised service providers through satellite radio can be watched on the television screen. Therefore the satellite television programmes are broadcast by the world space can be directly received in the television through world space (satellite radio) receiver.

(22) A television as claimed in claim (21). The incorporation of the satellite radio in television, according to my invention, Television arrangements with satellite radio and the video signal from the satellite radio (world space) section which are given to the video section of the television. Therefore the programmes of the satellite television through world space can be watched by the user on the television screen.

(23) A television as claimed in claim (1). The user can utilise the entire features of the satellite radio in a television.